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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/575,216	04/10/2006	Hidekazu Nishiuchi	NNA-110-B	6925

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EXAMINER	
BITAR, NANCY	

ART UNIT	PAPER NUMBER
2624	

NOTIFICATION DATE	DELIVERY MODE
06/22/2009	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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Office Action Summary	Application No.	Applicant(s)	
	10/575,216	NISHIUCHI, HIDEKAZU	
	Examiner	Art Unit	
	NANCY BITAR	2624	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *06 April 2009*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-19* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-19* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *10 April 2006* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Response to Arguments

1. Applicant's response to the last Office Action, filed 01/09/2009, has been entered and made of record.

2. Applicant has amended claims 1-19. Claims 1-19 are currently pending.

3. Applicants arguments filed 04/06/2009 have been fully considered but the are not persuasive.

4. Applicant argues that Nagoaka et al fails to teach that any of the imaged are captured at a time when the vehicle has a level pitch and at anther time when the level has a non-level pitch. Examiner disagree with applicant since Nagaoka clearly teaches is figure 7 C the objects are tracked at time intervals, that is, identification or recognition of identical objects is carried out whenever each sampling repetition period elapses. Assuming that a time obtained by discretizing time t as an analog amount by a sampling repetition period is represented by k, objects 1 and 2 extracted at time k, as shown in FIG. 8A, and objects 3 and 4 extracted at time (k+1) as shown in FIG. 8B are checked as to their identity. More specifically, it is determined that the objects 3 and 4 are identical with the respective objects 1 and 2 when the following identification conditions (1) to (3) are satisfied, and the objects 3 and 4 are labeled as objects 1 and 2 to thereby track the objects at time intervals: Applicant argument that the references fail to show certain features of applicant's invention, it is noted that the features upon which applicant relies (i.e.: the vertical coordinate of an

image or the pitch of the vehicle.) are not recited in the rejected claims. Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).Note that the vertical direction is shown in Nagaoka figures 12A and 12B. Additionally the applicant argues that Nagaoka fails to teach or suggest a controller configures to determine whether a first pitch of the vehicle at the first time is level and whether a second pitch of the vehicle at the second time is level and to determine the position of the object in the second image based on the position of the object in the first image of the first pitch is level and the second pitch is non-level. In response, Nagoaka discloses a position detecting device for a vehicle that detects the position of an object in a real space coordinate system. Pitching is calculated based on camera data and adjusted based on the level or balancing. Nagaoka discloses a system and method for controlling the pitch is level or non-level, object size, as well as track objects at all time intervals (velocity and acceleration at any point in time) and determine and correct the pitching (see abstract; column 3-4 and figures 1-3). Note that Examiner will use a new secondary reference to elaborate more on the controller as claimed in claim 1.

All remaining arguments are reliant on the aforementioned and addressed arguments and thus are considered to be wholly addressed herein.

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

5. Claims 1-19 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. Claim 1 teaches "a first pitch of the vehicle at the first time is level and whether a second pitch of the vehicle at the second time is level "that was not described in the specification.

However, there is no description in the specification to support the limitation "the pitch of the vehicle as being **level** or **not level** "as recited in the claims. The closest disclosure in the specification is as follows:

FIGS. 2A and 2B show an example of change in the position of the object present the front of the vehicle in the picked-up image when the vehicle is in balance (FIG. 2A) and when pitching of the vehicle takes place (FIG. 2B). As shown in FIG. 2A, assuming the deviation angle to be .theta when the object is viewed from the camera vision axis .theta. with respect to the horizontal direction, y-coordinate value yo in the picked-up image when the vehicle is balanced.

Claims 2-19 includes the same limitation of claim 1 and are thus rejected for the same reason as claim 1. Appropriate correction is required.

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

7. Claims 1-19 rejected under 35 U.S.C. 103(a) as being unpatentable over Nagaoka et al (JP 2002-005656)) and Fujimoto et al.(JP 2004-346670 filed Nov, 20 2004; note that US 2008/0273750 is used as translation to the Japanese application)

As to claim 1, 7 and 14; Nagaoka teaches detecting the position of an object in one or more images captured by an image pickup device mounted on a vehicle, comprising:
(a) a memory configures to store a plurality of images captured by the image pickup device, including a first image of an object taken at a first time when the vehicle is balanced and a second image of the object captured at a second time (figure 3 is a flow chart which shows the procedure of the position detection process of the subject in the image processing unit 2, and this processing is performed for every predetermined time. The A/D conversion of the output signal of the cameras 1R and 1L is carried out first, and it stores in an image memory (Step S11, S12, S13). The picture stored in an image memory is a gray scale picture included brightness information, paragraph [0016]; note that Thus, the position coordinate (area center of gravity) of each recognized subject is stored in a memory as time series position data, and is used for next data processing, paragraph [0025]); and (b) a controller operatively coupled to the memory and configures to determine whether a first pitch of the vehicle at the first time is level and whether a second pitch of the vehicle at the second time is level and to determine the position of the object on the second image based on the position of the object in the first image if the first pitch is level and the second pitch a non-level (figure 7C and 8 and figure 4 , and in Step S41, while computing the vehicles movement magnitude D by carrying out time quadrature of the vehicle speed VCAR, from carrying out time quadrature of the yaw rate YR, compute yaw angle (swinging angle) theta of the vehicles 10, a stillness subject is made to correspond to position data, and it memorizes. In Step S42, the position

data of a camera coordinate system is computed about a stillness subject. A possibility of being detected during vehicle running uses a "stillness subject" as a subject stationary highly and certainly, for example like a signal or a telegraph pole, and it is judged by the existence of the feature of such a subject here. Specifically, what fulfills the following conditions is judged to be a "stillness subject." paragraph [0044]). Note that the image processing unit 2 constitutes a position sensing device from this embodiment, and it more specifically, Step S23 of drawing 3 and Step S42 of drawing 4 are equivalent to the 1st position data calculating means, Step S45 and Step S46 of drawing 4 are equivalent to an approximation-straight-lines calculating means and a pan angle calculating means, respectively, Step S24 of drawing 3 is equivalent to the 2nd position data calculating means, and Step S44 of drawing 4 is equivalent to a turning travel compensation means, paragraph [0055]).While Nagoaka meets a number of the limitations of the claimed invention, as pointed out more fully above, Nagaoka fails to specifically teach the controller operatively coupled to the memory. Specifically, Fujimoto et al et al. teaches a controller that performs image processing on the image to compute the velocity information for each pixel in the image, and, on the basis of the computed velocity information for each pixel in the image, extracts the pixels that contain velocity information, detects the oblique lines formed by the extracted pixels, and detects the boundary lines on the road on the basis of the detected oblique lines (see abstract, paragraph [051-083]). Note that Fujimoto teaches the controller 103 that executes image processing of the images taken with camera 101 and stored in image memory 102, counter memory 104 that stores the count value of the pixel counter to be explained later, speaker 105 that outputs sounds, automatic braking device 106 that controls the vehicle brakes, and vehicle speed sensor 107 that detects the speed of the vehicle and the controller is further adapted to detect a change point where

the velocity direction of an oblique line changes, and to judge that the change point as the balance point of the pitch generated by the movement of the vehicle. it would have been obvious to one of ordinary skill in the art to control the vehicle levels in Nagoaka in order to accurately detect variation in the position of the object due to pitching that takes place .Therefore, the claimed invention would have been obvious to one of ordinary skill in the art at the time of the invention by applicant.

As to claim 2, 8, and 15 Nagaoka teaches the controller is further configured to compute an image acceleration of the second image; and to determine that the second image was captured when the second pitch of the vehicle was level if the image acceleration of the second image is zero (Step S41, while computing the vehicles movement magnitude D by carrying out time quadrature of the vehicle speed VCAR, from carrying out time quadrature of the yaw rate YR, compute yaw angle (swinging angle) theta r of the vehicles 10, a stillness subject is made to correspond to position data, and it memorizes, figure 4).

As to claim 3,9,16; Nagaoka teaches the controller is further configured to compute the vertical image velocity of the second image, and to determine that the second image was captured when the second pitch of the vehicle was level if the second image has a zero image acceleration and a non-zero vertical image velocity (That is, if it explains taking the case of a case where the vehicles 10 performed a turning travel of point PA to yaw angle theta r, and reach the point PB, in order to remove influence of a turning travel, it is necessary to change coordinates of the stillness subject OBJS actually observed by position PA into coordinates observed with position PC. Position PC is an intersection with straight-line LH vertical to the straight line LPD through the straight line LPD which shows the present vehicle traveling direction, and position PA. The figure

(b) shows a stillness object image on a picture acquired with the camera 1R, and shows a position of an object image when OBJSA, OBJSB, and OBJSC observe in the positions PA, PB, and PC, respectively. The coordinates QOBJA in a camera coordinate system when the stillness subject OBJS is observed in position PA are set to (X1c, Y1c, Z1c) here, If the coordinates QOBJC which can set a camera coordinate system when the stillness subject OBJS is observed in position PC are set to (X1Rc, Y1Rc, Z1Rc), a relation with the coordinates QOBJA and QOBJC, paragraph [0041-0048]; see also equation 7).

As to claim 4, 10, and 17; Nagaoka teaches the memory includes a third image of the object captured at a third time when a third pitch the vehicle is level, and wherein the controller is further configured to determine the position of the object in the second image based on the position of the object in the first image and the position in the third image (paragraph [0047-0048; figures 15-16).

As to claim 5, 11, and 18, Nagaoka teaches the controller is further configured to compute a size of the object in the second image based on a size of the object in the first image if the second image was captured when second pitch of the vehicle was not level, and to compute a distance between the image pickup device and the object in the second image based on the computed sizes of the objects the first and second images (size of the object , paragraph [0024] and [0045-0046]; figure 15-16).

As to claim 6, 12, and 19, Nagaoka teaches the controller is further configured to compute the vision axis of the image pickup device based on the computed distance if the second image was captured when the second pitch of the vehicle was not level, and to compute the position of the object in the second image based on the computed vision axis (The approximation straight lines which the position data of the time series of a stillness subject is computed, and approximate the

relative-displacement locus of a stillness subject based on the position data of the this computed time series are computed, and the pan angle of the optic axis of an imaging means is computed based on the approximation straight lines. And the position data of the subject in a real space coordinate system is computed by amending the position data of the subject in an imaging means coordinate system according to a pan angle. Therefore, the pan angle which shows a gap of the transverse direction of the optic axis of an imaging means can be computed simply and correctly based on the picture acquired by an imaging means, and an exact detecting position can be performed and the position data computed by the 1st position data calculating means is amended using the parameter about the turning travel of vehicles and approximation straight lines are computed based on the position data after this amendment, Even when vehicles circle during pan angle calculation processing, an exact pan angle can be computed, paragraph [0055-0056])

Conclusion

8. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be

calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to NANCY BITAR whose telephone number is (571)270-1041. The examiner can normally be reached on Mon-Fri (7:30a.m. to 5:00pm).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Vikkram Bali can be reached on 571-272-7415. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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